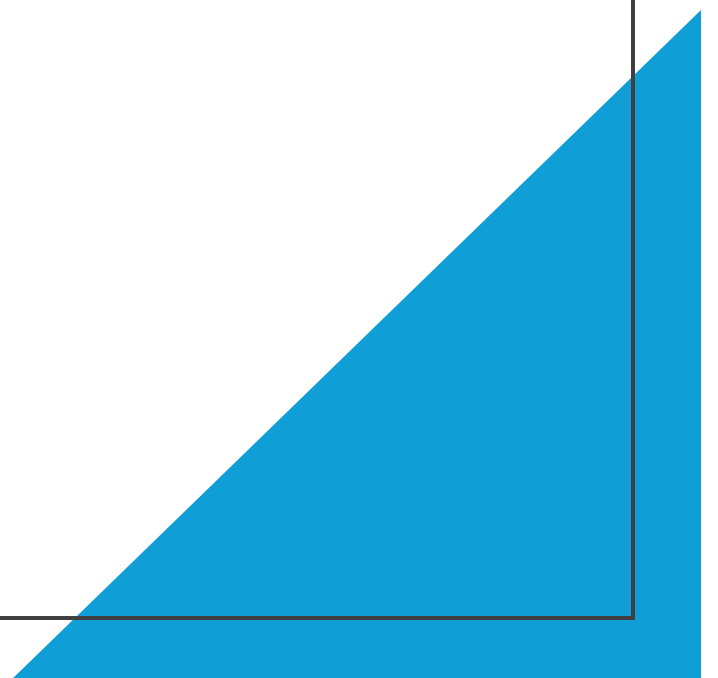


Data visualization for BIKE-SHARING DEMAND ANALYSIS

TEAM MEMBERS :

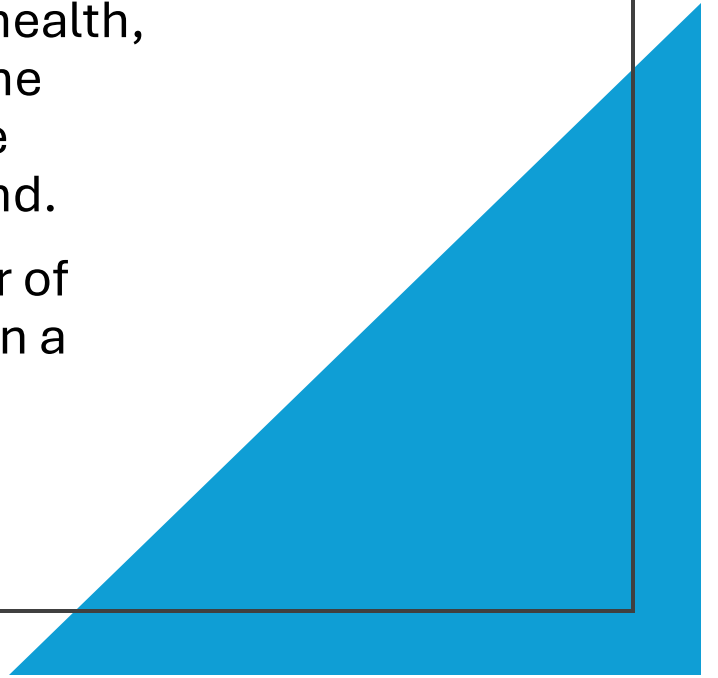
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Introduction

Describing the relevance and popularity of bike-sharing programs in urban areas. Highlighting their benefits in terms of sustainability, health, and congestion reduction. Interpreting the primary objectives of the analysis, such as understanding the factors influencing bike share demand, identifying usage patterns, and forecasting future demand.

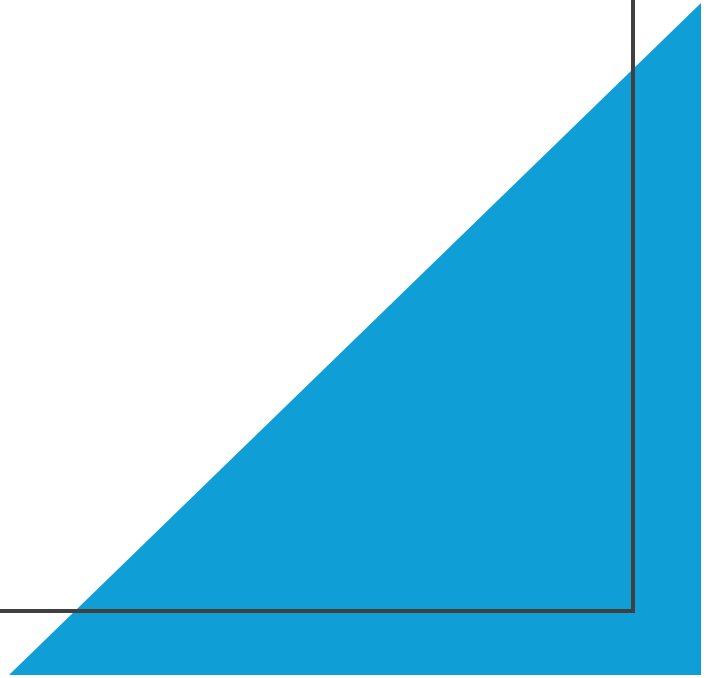
Using the given data to understand what factors affect the number of bike trips. Make a predictive model to predict the number of trips in a particular hour slot, depending on the environmental conditions.



Key Variables

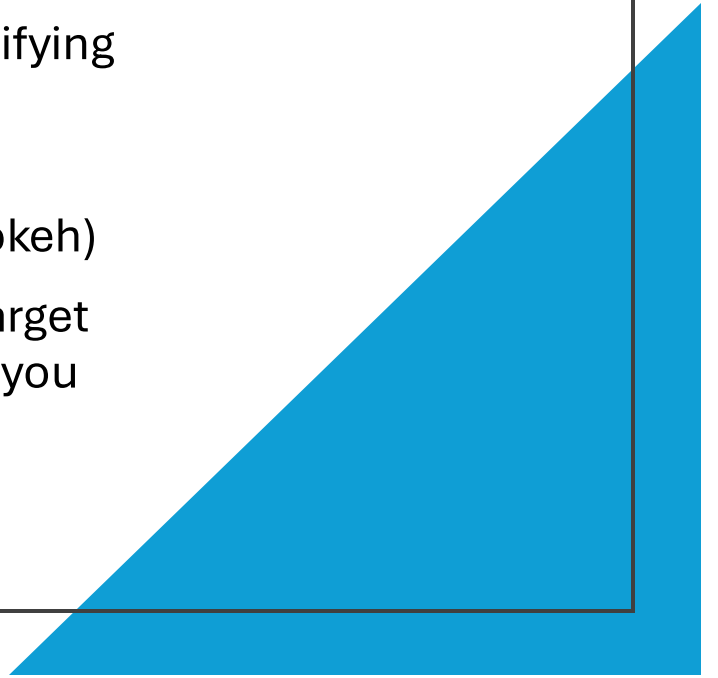
Identifying the key variables collected, such as:

- Trip start and end times
- Trip duration
- Start and end locations (stations)
- User demographics (age, gender, etc.)
- Weather conditions (temperature, precipitation, etc.)
- Day of the week, holidays, and special events

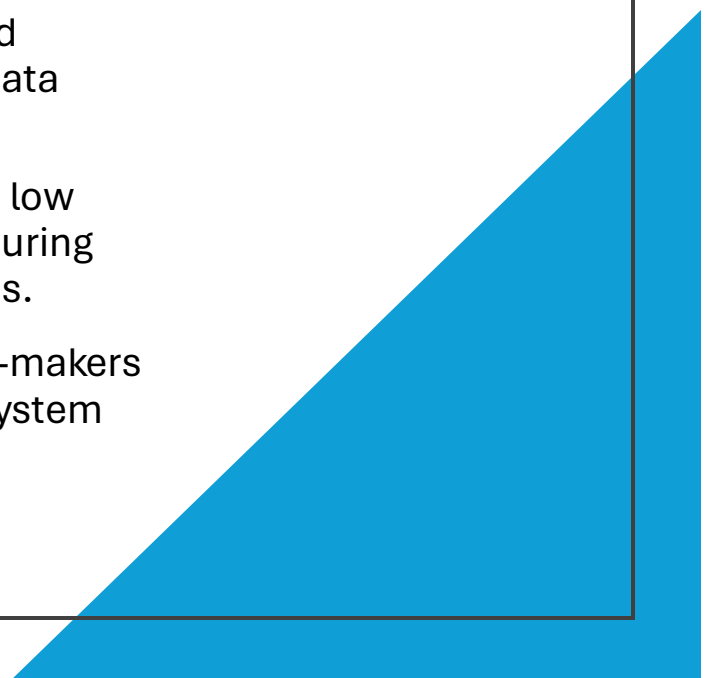


Architecture

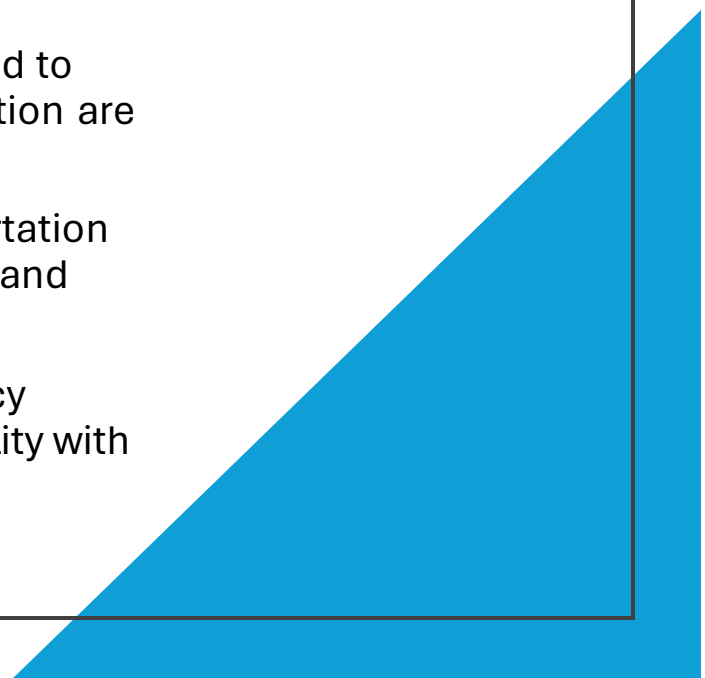
- **Data acquisition:** Lyft bike-sharing data (hour.csv)
- **Data Cleaning and Preprocessing:** Handling missing values, Identifying and correcting outliers, Transforming data formats.
- **Data Visualization Tools:** Python Libraries (Matplotlib), Interactive Visualization Tools (Tableau, Power BI), Web-Based Tools (Plotly, Bokeh)
- **Identifying Trends and Patterns:** Tailor the visualizations to your target audience, considering their technical knowledge and what insights you want to convey.



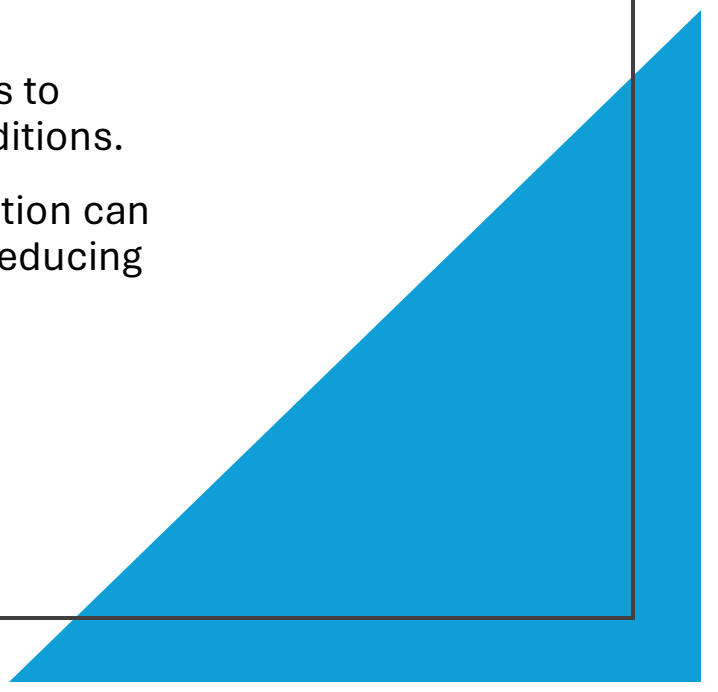
Advantages

- **Improved Pattern Recognition:** Visualizations like time series charts and heatmaps can reveal trends and patterns in bike share demand that might be difficult to spot in spreadsheets filled with numbers.
 - **Enhanced Communication:** Complex data sets become easier to understand and communicate to stakeholders like city planners, investors, or the public through data visualizations.
 - **Targeted Resource Allocation:** Visualizations can help identify areas with high or low bike demand. This information can be used to optimize bike station locations, ensuring more bikes are available in high-demand areas and reducing underutilized stations.
 - **Data-Driven Decision Making:** By visualizing bike share usage patterns, decision-makers can make informed choices about pricing strategies, marketing campaigns, and system expansion.
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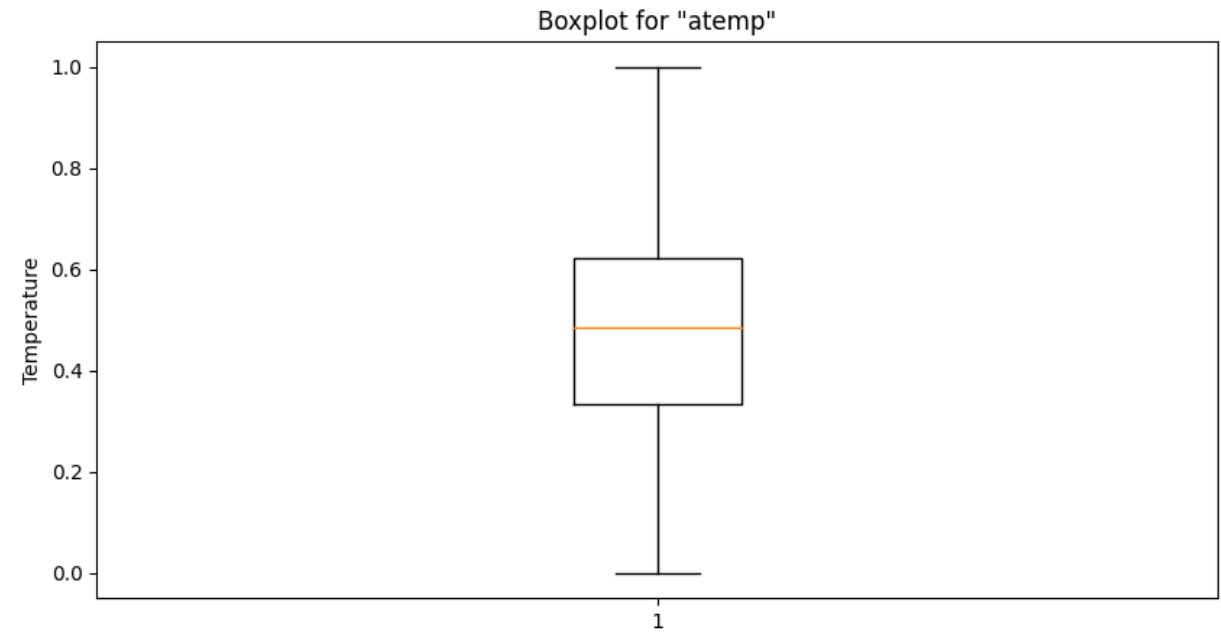
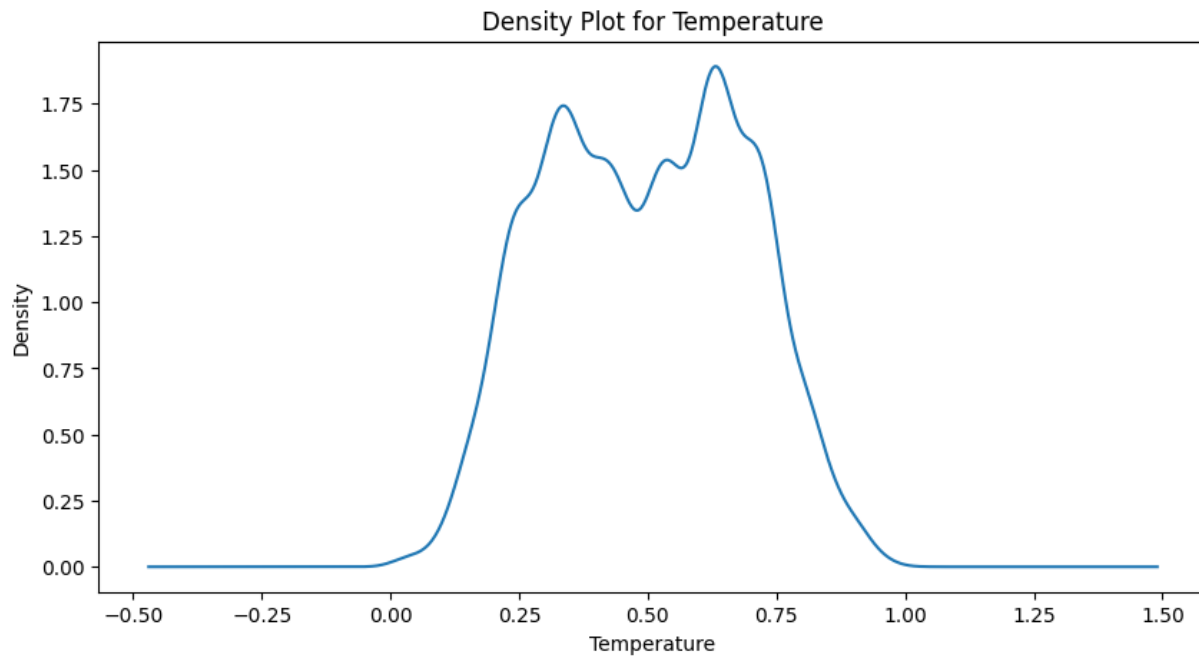
Disadvantages

- **Data Limitations:** Bike-sharing data might not capture all relevant factors influencing demand. Factors like weather data, special events, or temporary infrastructure changes may not be readily available, hindering a comprehensive analysis.
 - **Data Quality:** Data quality issues like missing entries or inconsistencies can lead to misleading visualizations and inaccurate conclusions. Data cleaning and validation are crucial before drawing insights.
 - **External Factors:** Unexpected events like weather fluctuations, public transportation disruptions, or spontaneous social gatherings can significantly impact demand and may not be fully captured in the data or visualizations.
 - **Privacy Concerns:** Data collected from bike-sharing systems might raise privacy concerns, especially if it includes user location information. Balancing data utility with user privacy is important.
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Application

- **Interactive Map:** A map visualization would display bike-sharing stations across the city, color-coded based on real-time bike availability.
 - **Weather Impact:** Scatter plots or heatmaps would illustrate the correlation between weather conditions and bike-sharing demand.
 - **Marketing and Outreach:** Data insights can inform targeted marketing campaigns to promote bike-sharing in areas with lower ridership or during specific weather conditions.
 - **User Experience Enhancement:** By understanding demand patterns, the application can recommend nearby stations with available bikes, improving user experience and reducing frustration.
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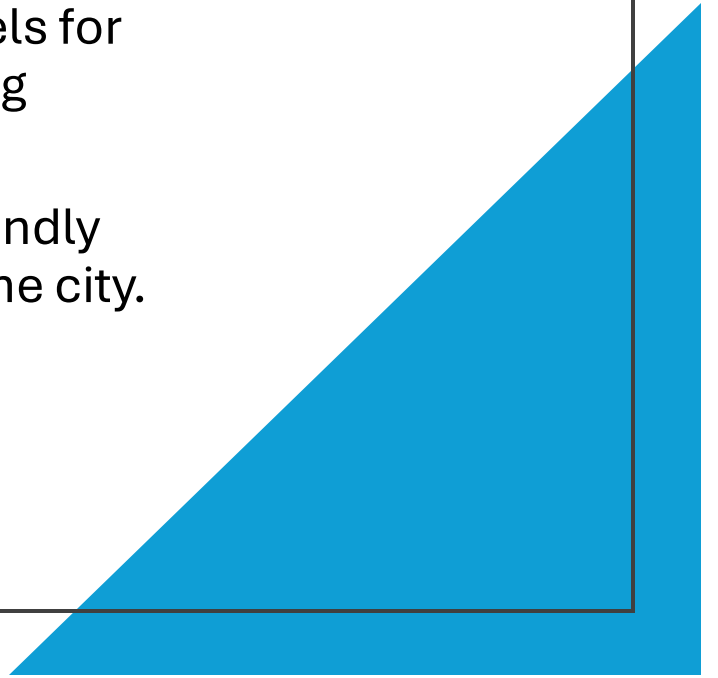
Result output



Conclusion

In conclusion, the data visualizations from our bike share demand analysis provide valuable insights to optimize the system and improve ridership. By identifying peak usage times, popular routes, and weather influences, we can strategically place stations, adjust pricing models for different times of day, and potentially implement targeted marketing campaigns to encourage ridership during lower demand periods.

These data-driven actions can lead to a more efficient and user-friendly bike sharing system, promoting sustainable transportation within the city.





THANK YOU